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UNITED STATES DEPARTMENT OF AGRICULTURE
Rural Electrification Administration
Telephone Engineering Division



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Telephone Engineering Newsletter

Newsletters are intended to provide a means for answering questions that arise in the field and to advise the field of new developments. They are not intended to be instructions nor to replace in any respect the presently approved channels for establishing requirements and procedures. Suggestions for subjects will be gladly received.

Tests of Various Methods of Tying Line Wire to Insulators

Comparative tests of holding ability of various methods of tying line wire to insulators have recently been made in the field and in a laboratory. Accelerated vibration tests on ties have also been made in the laboratory. One development underway as the result of recent experiences with ties is a method using a spiral splint that can be tied to the insulator before it is put on the insulator pin. Preliminary tests in the laboratory indicate that it has satisfactory holding power. It has advantages in that the ties to the glass can be made and inspected on the ground or in the storeroom and further that the splints can be un-spun from the line wire to permit re-sagging the line wire after which they can be re-spun on the wire with no waste of material or loss in holding power. A trial installation of an interim arrangement embodying this idea was recently made on a short section of new line on a Michigan project.

Loading Coil Insulation

Until recently, loading coils commercially available to REA borrowers had paper insulated cable stubs. Paper cable has a much lower breakdown voltage than plastic cable and therefore lightning often causes a breakdown of the insulation between paper insulated conductors and sheath at the point where the stubs were connected into plastic insulated cable. The design was changed to provide plastic sheathed, plastic insulated stubs to prevent this trouble. The insulation between the coils and the case then became the weak point with resulting breakdown from the coils to the sheath of the case. The design therefore is being changed in two ways: the coils will be mounted on a polystyrene instead of a wood rod and the separators between coils will also be polystyrene instead of cardboard; and the layers of wrapping over the coils are being increased so that the voltage required to break down the insulation between coils and case will equal or exceed that between plastic insulated conductors and shield. Provision of low resistance ground connections for the shield of the plastic cable as near as practicable to the point of connection of the coil case stub and the main cable is desirable. These measures it is believed will minimize this problem in the future.

Tieing Line Wire on Point Type Transposition Brackets

Abrasion of insulator glass and line wire on point type transposition brackets has been reported from the field where high wind conditions prevail. This is an unexpected development because the angles made by the line wire in crossing over were considered to be sufficient to give ample resistance against longitudinal line wire movement. Since slippage apparently has occurred, a memorandum is being prepared for distribution to the field describing a method for tieing on point transposition brackets, where wind conditions appear to warrant. The method involves the use of straight splints and tieing only two of the four points at each transposition.

One Bare and One Covered Wire for Rural Lines

Bids have been received and approved for the polyethylene insulated .109 steel line wire for a project in North Dakota. The actual erection of the wire on this job appears to be some months away. It is expected that experience with this installation will be helpful in considering a design of open wire using both wires insulated. With this design, pins and insulators would not be necessary, spacings could be reduced, conductor life increased, transposition intervals reduced, and many other basic advantages may be obtained.

Revision of Construction Contract, DS-T-10R1

The Telephone System Construction Contract issued in July 1952 is undergoing revision and will be issued, probably in November, under a new number which is REA Form 511.

Trials of Kellogg and Holzer-Cabot New Type Ringing Machines

Trial installations were made in May at three dial offices of the South Plains Telephone Cooperative, Lubbox, Texas, using a new Kellogg electronic ringing machine at one office and Holzer-Cabot motor driven generators at two other offices. Both types operate on a.c. power. Standby service is provided by vibrators of the original installation. These trials were made to improve the ringing where the telephones have low impedance ringers. Monthly reports are being made which indicate 30 percent reduction in bell troubles and apparent satisfactory ringing from the customers' standpoint. The new machines give improved wave form as compared to vibrator machines, as well as higher voltage outputs. The new machines are for harmonic ringing but will be available also for decimonic and synchromonic systems. They will also be available for operation on either a.c. or d.c. power. The prices on the devices compare favorably with other types of ringing machines. The results to date are satisfactory.

Impending Issuance of TE & CM Sections

The following list of sections should be completed in the next 30 days and printed for distribution shortly thereafter:

Section 215, Rehabilitation of Existing Outside Plant

Section 218, Cost Analysis

Addendum to Section 430, Subscriber Line Loading

Radio Subscriber Line Circuit Installation

An installation of Raytheon radio equipment developed under REA contract will be completed in September between Wausaukee and Chalk Hills, Wisconsin, to provide service for two ten party rural lines between these points. The air line distance is about 12 miles from a 22 foot tower at Wausaukee to a 62 foot Forest Observer's Tower at Chalk Hills. The project avoids pole line construction which would be difficult and expensive if built in a direct line and circuitous if it followed the highway. The intervening terrain has a mixture of rocky land, forest and swamps and maintenance of a pole line would be expensive. The installation is more economical than a pole line. The service is to be ten party superimposed 20 cycle ringing from a dial office at Wausaukee. The frequencies to be used are 6350 m.c. in one direction and 6420 m.c. in the other.

Standardizing Dial Switchboards for REA Use

Steps have been taken to standardize various functions and features of Dial Switchboards for REA borrowers' telephone systems in such matters as are susceptible of uniformity. The important object is to shorten manufacturers' delivery periods and reduce costs by means of standardization. It is also important to have operating practices uniform, from the standpoint of a master office, which may have more than one type board as a tributary. A new specification has been sent to manufacturers for comment. The specification has been simplified by eliminating options wherever practicable. The new specification should contribute considerably in expediting the REA telephone program.

